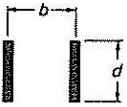
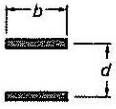
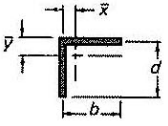
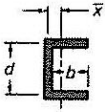
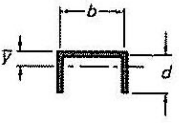
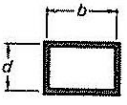
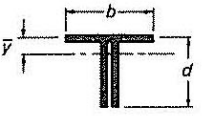
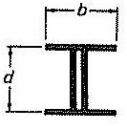
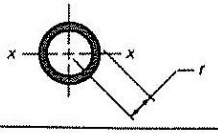
TABLE 5.18.1 PROPERTIES OF WELDS TREATED AS LINES

| | Section<br>$b$ = width; $d$ = depth | | Section Modulus<br>$I_x/\bar{y}$ | Polar Moment of Inertia, $I_p$<br>about Center of Gravity |
|---|---|---|---|---|
| 1. |  | | $S=\frac{d^2}{6}$ | $I_p=\frac{d^3}{12}$ |
| 2. |  | | $S=\frac{d^2}{3}$ | $I_p=\frac{d(3b^2+d^2)}{6}$ |
| 3. |  | | $S=bd$ | $I_p=\frac{b(3d^2+b^2)}{6}$ |
| 4. |  | $\bar{y}=\frac{d^2}{2(b+d)}$<br>$\bar{x}=\frac{b^2}{2(b+d)}$ | $S=\frac{4bd+d^2}{6}$ | $I_p=\frac{(b+d)^4-6b^2d^2}{12(b+d)}$ |
| 5. |  | $\bar{x}=\frac{b^2}{2b+d}$ | $S=bd+\frac{d^2}{6}$ | $I_p=\frac{8b^3+6bd^2+d^3}{12}-\frac{b^4}{2b+d}$ |
| 6. |  | $\bar{y}=\frac{d^2}{b+2d}$ | $S=\frac{2bd+d^2}{3}$ | $I_p=\frac{b^3+6b^2d+8d^3}{12}-\frac{d^4}{2d+b}$ |
| 7. |  | | $S=bd+\frac{d^2}{3}$ | $I_p=\frac{(b+d)^3}{6}$ |
| 8. |  | $\bar{y}=\frac{d^2}{b+2d}$ | $S=\frac{2bd+d^2}{3}$ | $I_p=\frac{b^3+8d^3}{12}-\frac{d^4}{b+2d}$ |
| 9. |  | | $S=bd+\frac{d^2}{3}$ | $I_p=\frac{b^3+3bd^2+d^3}{6}$ |
| 10 |  | | $S=\pi r^2$ | $I_p=2\pi r^3$ |